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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
)
David W. CANNELL *et al.*) Group Art Unit: 1615
)
Application No.: 09/614,118) Examiner: H. Sheikh
)
Filed: July 11, 2000)
)
For: THE USE OF C3-C5) Confirmation No.: 1975
MONOSACCHARIDES TO)
PROTECT KERATINOUS FIBERS)

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Commissioner for Patents
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Sir:

APPEAL BRIEF UNDER BOARD RULE § 41.37

In support of the Notice of Appeal filed July 27, 2005, and further to Board Rule 41.37, Appellants present this Appeal Brief. A check for the fee of \$500.00 required under 37 C.F.R. § 1.17(c) is enclosed. A Notice of Panel Decision from Pre-Appeal Brief Review was mailed August 31, 2005. In view of the concurrently filed petition for a four month extension of time, this Brief is due Monday, January 28, 2005, and is timely filed.

This Appeal responds to the April 1, 2005, final rejection of claims 30-56, which are set forth in the attached Appendix. If any additional fees are required or if the enclosed payment is insufficient, Appellants request that the required fees be charged to Deposit Account No. 06-0916.

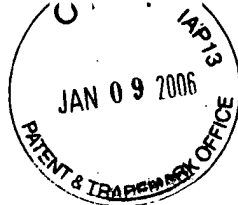


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I. REAL PARTY IN INTEREST

L'ORÉAL S.A. is the assignee of record, as evidenced by the assignment document filed in the U.S. Patent and Trademark Office on August 16, 2000, and recorded at Reel 011047 and Frame 0370.

II. RELATED APPEALS AND INTERFERENCES

There are currently no other appeals or interferences, of which Appellants, Appellants' legal representative, or Assignee are aware, that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-56 are pending in this application. Claims 30-56 stand rejected and are being appealed. Claims 1-29 stand withdrawn as drawn to a nonelected invention. A complete listing of the pending claims is included in the attached appendix.

IV. STATUS OF AMENDMENTS

No amendments have been made in response to the Final Office Action mailed April 1, 2005.

V. SUMMARY OF CLAIMED SUBJECT MATTER

A. Overview of the Claimed Subject Matter

Keratinous fibers, such as hair, are constantly exposed to harsh extrinsic conditions that damage the fibers. Specification, page 1, ¶2.¹ One form of damage caused by extrinsic conditions is a disruption in the organized structure of the keratinous fiber, called the α -structure, which may be accompanied by a decrease in tensile strength. *Id.* Because the α -structure is sensitive to extrinsic conditions, the extent of damage to a keratinous fiber can be determined by monitoring changes in the α -structure. *Id.* at 7, ¶2. Techniques for monitoring the α -structure include X-ray diffraction and differential scanning calorimetry (DSC). *Id.*, ¶3. The specification describes DSC in detail. *Id.* at 7-10. Tensile strength can also be used to detect detrimental changes in the chemical composition of a keratinous fiber. *Id.* at 11.

Sugars have been applied to keratinous fibers for a variety of reasons, but not all sugars are the same and not all sugars impart the same properties when applied to a keratinous fiber. *Id.* at 4. In particular, the use of sugars that protect hair from extrinsic damage and protect the α -structure of hair from such damage has not been demonstrated. *Id.* at 4-5, bridging paragraph. The inventors have found, however, that a special class of sugars, C3 to C5 monosaccharides, provides keratinous fibers with an improved protection from extrinsic conditions and helps to restore the damage caused by those conditions. *Id.* at 7, ¶1; *see also* Tables 5-19. The invention therefore

¹ The references to the specification in this Brief are merely intended to facilitate explaining how the application provides exemplary disclosure relating to the claimed subject matter. Those references are not necessarily exhaustive. Furthermore, those references should not be construed as limiting the claims.

provides methods of protecting a keratinous fiber from extrinsic damage and/or repairing keratinous fibers following extrinsic damage, wherein the methods comprise applying compositions comprising this special class of sugars. *E.g., id.* at 6.

B. Support for the Claimed Subject Matter

The subject matter of independent claim 30 is a method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage. This is described in the specification in various locations, for example on page 6, ¶3. The methods comprises applying to said keratinous fiber a composition comprising at least one sugar chosen from C3 to C5 monosaccharides and derivatives thereof; and heating said keratinous fiber to at least 45°C, wherein said composition is applied prior to said heating or during said heating. The specification describes this methodology, for example, on page 18, and in the other Examples. As shown in the specification in Tables 5-19, the at least one C3 to C5 monosaccharides is present in an amount effective to protect said keratinous fiber or repair said keratinous fiber. As described in the specification on pages 5-6, "protecting" a keratinous fiber means preserving a greater degree of the α -structure and/or the tensile strength of the keratinous fiber following treatment of the keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition; and "repairing" a damaged keratinous fiber means increasing the α -structure and/or tensile strength of the damaged keratinous fiber following treatment of the damaged keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition.

As recited in claims 31 and 32, one of the special classes of sugars that are useful in the practice of the invention are the pentoses (C5 sugars). This is described in

the specification on page 12, ¶3. The specification also describes in that location that those pentoses can be chosen from aldopentoses and ketopentoses.

Claim 33 sets forth individual species of aldopentoses that may be used in the methods of the invention. The specification on page 12, ¶3 discloses aldopentoses, and that the aldopentoses are chosen from xylose, arabinose, lyxose, and ribose.

In claim 34, individual species of ketopentoses that may be used in the methods are recited. The specification on page 12, ¶3 describes ketopentoses, and that they can be chosen from ribulose and xylulose.

Claims 35-38 recite another of the special classes of sugars that are useful in the practice of the invention, tetroses (C4 sugars), and individual examples of both aldotetroses and ketotetroses. The specification describes the tetrose class of sugars on page 12, ¶3, and notes that tetrose include aldotetroses, such as erythrose and treose, and ketotetroses, such as erythrulose.

In claims 39-42, the third special class of sugars useful in the practice of the invention is recited both generically as trioses (C3 sugars), as subclasses (aldotrioses and ketotrioses), and specifically as individual examples. The general class of trioses for use in the methods of the invention is described in the specification on page 12, ¶3. The aldotriose and ketotriose subclasses, as well as the individual species of glyceraldehyde and dihydroxyacetone are also described at that location.

As recited in claim 43, C3 to C5 monosaccharides also include furanoses and derivatives thereof. Those C3 to C5 monosaccharides are described in the specification at the top of page 13.

Claim 44 recites specific derivatives of C3 to C5 monosaccharides chosen from amine derivatives, hemiacetal derivatives, hemiketal derivatives, and oxidized derivatives. Those derivatives are described in the specification on page 13, ¶1.

Similarly, claim 45 recites derivatives chosen from dimers and oligomers of C3 to C5 monosaccharides, while claim 46 recites a specific dimer: xylobiose. Dimers and oligomers, including xylobiose, are also described on page 13, ¶1 of the specification.

Claims 47-50 and 52 each recites that the composition used in the methods of the invention may further comprise at least one additional sugar. Claim 47 does this generically, while claims 48-50 set forth those additional sugars in greater detail. Claim 52 recites the amounts at which the at least one additional sugar is present in the composition. General support for the inclusion of at least one additional sugar can be found in the specification at page 13, ¶2. The specification describes specific examples of the at least one additional sugar on page 14, ¶1, while ¶2 of that page describes the amounts of those sugars.

Claim 51 similarly sets forth the amounts of the at least one sugar present in the composition used in the methods. Those amounts are described in the specification on page 14, ¶2.

Claim 53 recites that the composition used in the method can be in the form of a liquid, oil, paste, stick, dispersion, emulsion, lotion, gel, or cream. Those forms are described in the specification on pages 14-15, in the bridging paragraph.

Claim 54 recites that the keratinous fiber is chosen from hair, eyelashes, and eyebrows. Those keratinous fibers are described in various locations in the specification, for example, on page 1, ¶1.

Claim 55 recites examples of different causes of extrinsic damage. Those examples are supported in the specification at least on page 1, ¶1.

Finally, claim 56 recites that the composition used in the method both protects a keratinous fiber from extrinsic damage and repairs a keratinous fiber following extrinsic damage. Support for this claim can be found throughout the specification, in particular in the examples, but also on page 6 in the paragraph that continues on to page 7.

VI. Grounds of Rejection

Claims 30-56 stand rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Wisotzki et al. (U.S. Patent No. 4,900,545) ("*Wisotzki*"), or Koga et al. (U.S. Patent No. 5,660,838) ("*Koga*"), or Syed et al. (U.S. Patent No. 5,641,477) ("*Syed*").

VII. ARGUMENT

Each claim of the present application is separately patentable, and upon issuance of a patent will be entitled to a separate presumption of validity under 35 U.S.C. § 282. The arguments set forth below are arranged under subheadings, and in accordance with 37 C.F.R. § 41.37(c)(1)(vii), these subheadings indicate the claims for which patentability is argued separately.

A. Claims 30-32, 45, 46, 51, 53-56 Are Patentable Under 35 U.S.C. § 103(a) Because The References Fail To Suggest That The Keratinous Fiber Should Be Heated To At Least 45°C And So Fail To Teach Or Suggest Every Aspect Of The Claims

Claims 30-56 stand rejected under 35 U.S.C. § 103 as allegedly unpatentable over *Wisotzki*, or *Koga*, or *Syed*. Final Office Action, page 2. It is the Office's position that the cited references teach that sugars can be applied to hair to reduce damage to the hair, and that Appellants "have not shown any unexpected results that accrue from the use of C₃-C₅ sugars." Final Office Action at 9. The Office acknowledges that none of the references teach heating the keratinous fiber to at least 45°C, but according to the Office, the "[b]urden is shifted to Applicant to demonstrate some unexpected results or criticality in the claimed amount of 'at least 45°C' since the prior art teaches obtaining effective results using temperatures presented in the art." *Id.* at 9-10. Thus the position of the Office is that because the references teach sugars in general, it would have been obvious to select the particular C₃-C₅ subset of sugars recited in the method claims, and further, it would have been obvious to include in a method of protecting or repairing a keratinous fiber from extrinsic damage a heating step that is at least 10°C higher than any temperature mentioned in any of the references cited by the Office.

Appellants respectfully submit that the Office's position disregards the requirements for establishing a *prima facie* case of obviousness and incorrectly requires Appellants to provide evidence of secondary considerations which are only relevant if the Office establishes a *prima facie* case. In order to establish a *prima facie* case of obviousness, the Office must demonstrate that there is some suggestion or motivation, either in the cited references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference. See M.P.E.P. § 2143. Moreover, "all claim limitations must be taught or suggested." M.P.E.P. § 2143.03. "If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness." M.P.E.P. § 2143.02.

Appellants maintain for the reasons of record that the teachings of *Syed*, *Witsozki*, and *Koga* did not render claim 30 unpatentable even without the inclusion of a method step in which the keratinous fiber is heated to at least 45°C. In particular, none of the references cited teach or suggest that the keratinous fiber should be "heated" as that term would be understood by one of ordinary skill in the art. To expedite prosecution, however, the claims were amended to specify that the keratinous fiber is heated to at least 45°C.

Wisotzki teaches compositions that can be used in hair rinses to reduce the number of split ends. See, e.g., the Example at columns 5-6. In the Examples, the compositions are prepared and allowed to cool to either 25°C or 30°C. Column 5, lines 44-68. It is unclear from the examples, however, if the compositions are actually applied to a keratinous fiber at those temperatures. Assuming for the sake of argument that the compositions are used as hair rinses at 25°C or 30°C, those temperatures are

not at least 45°C, as claimed. Although the Office has asserted that a hair rinse at 25°C or 30°C is only “slightly lower” than heating a keratinous fiber to at least 45°C, this is a temperature difference of at least 150%!

The Office evidently considers the temperature to be a result-effective variable, because it points to *In re Aller*, 220 F.2d 454, 456, 105 U.S.P.Q. 233, 235 (CCPA 1955), for the proposition that “it is not inventive to discover the optimum or workable ranges by routine experimentation.” Final Office Action, page 9. However, “[a] particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.” M.P.E.P. § 2144.05.II.B. (citing *In re Antonie*, 559 F.2d 618, 195 U.S.P.Q. 6 (CCPA 1977)).

Appellants respectfully note that *Wisotzki* does not teach that the keratinous fiber should be heated during or after the application of the composition. Absent any direction as to the importance of temperature on the effect of the composition, there can be no motivation for the ordinary artisan to then optimize the temperature, as asserted by the Office.

The only time *Koga* discusses a temperature is with respect to the humidity chamber experiments at column 4-7, which in some cases expose the composition to 35°C. Besides not teaching the recited temperature, *Koga* does not even teach applying the composition to a keratinous fiber prior to or during the heating, as recited in the claimed method. Instead, *Koga* heats a sample of the composition as part of humidity chamber experiments, which do not involve application of the composition to a keratinous fiber. Nothing in *Koga* suggests that it is important to heat a keratinous fiber

during or after the application of the composition. *Koga*, therefore, does not teach or suggest the claimed method step of heating a keratinous fiber to at least 45°C.

Finally, *Syed* mentions only a "tepid" water rinse following application of the lanthionizing composition and that the tensile strength of the hair is then evaluated while the hair is immersed in water at a temperature of 21°C. Column 5, lines 7-47. Even assuming for the sake of argument that either a tepid water rinse or the tensile strength test were a method step that involved "heating," it is clear that in neither case is the keratinous fiber heated to at least 45°C, as claimed. Further, Appellants respectfully note that there is nothing in the teachings of *Syed* that in any way suggests that it could be important to heat the keratinous fiber to minimize the decrease in tensile strength that results from applying the lanthionizing composition.

None of *Wisotzki*, *Koga*, or *Syed* teach or suggest every aspect of the claims. In addition, the Office has not pointed to any basis in either *Wisotzki*, *Koga*, or *Syed* that shows that temperature was recognized as a result-effective variable. Therefore, the teachings of those references do not render any of the claims unpatentable, and Appellants respectfully request reversal of those rejections.

B. Claims 33-44 Are Separately Patentable Under 35 U.S.C. § 103(a) Because The Office Points To No Reasons Why The Ordinary Artisan Would Have Been Motivated To Select The Specific Sugars Or Sugar Subsets Claimed

Appellants respectfully submit that claims 33-44 are independently patentable under 35 U.S.C. § 103(a). Claims 33-44 recite the tetrose and triose classes of monosaccharides, individual species of pentose, tetrose, and triose monosaccharides, and C3 to C5 monosaccharide derivatives. The Office, however, has failed to establish

a *prima facie* case of obviousness because it provides no reason why the ordinary artisan would have been motivated to select any of those recited sugars or sugar classes. Instead, the Office argues in essence that, based on the teaching of the references, it would have been obvious to use any sugar.

According to the Office, *Wisotzki* teaches “a method for regenerating, revitalizing, or repairing hair comprising applying mono- or disaccharide sugar, particularly pentoses (5 C-atoms) and the disaccharides derived from pentoses.” Final Office Action, page 3. The Office states that “Witsozki [sic] teaches that the mono- or disaccharides are any aldoses and ketoses or their mixtures. *Id.* The Office further points to col. 2, lines 36-49 of *Wisotzki* as teaching that “suitable monosaccharides include glucose, mannose, galactose, ribose, arabinose, xylose, fructose, and sorbose, while suitable disaccharides include sucrose, lactose, maltose and cellobiose.” *Id.* The Office concludes, based on the teachings of *Wisotzki*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the teachings of Witsozki [sic] . . . because Witsozki [sic] demonstrate that a hair regenerating effect can be enhanced by employing a mono- or disaccharide to treat damaged hair. *Id.* at 4.

Appellants respectfully note that *Wisotzki* uses a C6 sugar (glucose) in the examples and mentions in column 2 at lines 47-49 that glucose is preferably used in the composition for repairing split ends. Since glucose, a C6 sugar is preferred, the ordinary artisan would not have been motivated to select other sugars for inclusion in a method that is not the same as *Wisotzki*'s method. Contrary to the Office's position, it is not simply a matter of substituting a C5 sugar into the examples of *Wisotzki*, because as discussed *supra*, *Wisotzki* does not teach the claimed method steps. Instead, the

ordinary artisan would have to have some reason not only to select a non-preferred sugar, but also to select that sugar for inclusion in a different method.

Further, Appellant's data indicate that not all sugars are the same. For example, the various Examples describe applying the compositions of the invention to swatches of hair at 45°C. Some of the swatches are then heated with a blow dryer, and are referred to as "treated at 45°C." Other swatches are heated to 130°C with a flat iron, and are referred to as "treated at 130°C." Example 3 provides a particularly clear description of the heat cycle test described more generally in other sections of the specification. Tables such as 11 and 12 show that pentoses, but not the hexose D-glucose, protect hair from extrinsic damage at these temperatures.

Syed also does not provide any motivation to select a C3 to C5 sugar from among the sugars mentioned. *Syed* is directed to a process for relaxing hair fibers with a lanthionizing composition. Col. 2, lines 21-27. The composition comprises a hydrogenated starch hydrolysate and/or a sugar. *Id.* Preferably, the sugars are sucrose or sorbitol. Col. 3, lines 7-8. In addition, *Syed* uses C6 sugars in the examples. Among the representative sugars listed in col. 3, lines 5-8, only one sugar, glycerol, is a C3 to C5 monosaccharide or derivative thereof. Thus to arrive at the claimed invention, one of ordinary skill in the art would have to first choose a sugar rather than a hydrogenated starch hydrolysate. Then, one would have to ignore the preferred embodiments of sucrose or sorbitol and pick out the single C3 to C5 monosaccharide or derivative thereof taught by *Syed*. Finally, as discussed *supra*, one of ordinary skill in the art would have to modify the method steps of *Syed* to include a step of heating a keratinous fiber to at least 45°C.

Appellants respectfully submit that the multiple selections and modifications involved in reaching the claimed method render it unobvious over the *Syed's* teachings. Further, Appellants again note that the tensile strength experiments of *Syed all show damage to the hair via reduced tensile strength*. One of ordinary skill in the art would have found a composition that damages hair unsuited for use as a base composition into which different sugars were then substituted for use in a method of protecting a keratinous fiber from extrinsic damage.

The Office also cites *Koga*, which is directed to "xylobiose-containing skin preparations." See Abstract. The compositions of *Koga* may reduce "excessive roughness and dryness of hair to give a natural oiliness." Col. 1, lines 10-14. As noted *supra*, *Koga* does not teach heating a keratinous fiber, or applying its xylobiose composition prior to or during the heating. Appellants further note that *Koga's* teachings are limited to xylobiose, a C5 dimer, although the reference indicates that the related products of xylose and xylotriose may be present in the xylobiose-composition without any impairment of the moisture-retaining properties of xylobiose. Col. 2, lines 37-46.

Appellants respectfully submit that the narrow and xylobiose-specific teachings of *Koga* do not in any way suggest that other C3 to C5 monosaccharides could be substituted in the composition of *Koga*. Further, as discussed in detail *supra*, even if such a substitution were made, *Koga* does not teach the claimed method steps.

Therefore, *Koga*, like *Wisotzki* and *Syed*, does not provide any motivation for the ordinary artisan to substitute any other sugars into the composition of *Koga*, and certainly does not provide any motivation for the ordinary artisan to arrive at the invention set forth in claims 33-44. Accordingly, Appellants respectfully submit that the

Office has not established a *prima facie* case of obviousness with respect to claims 33-44. For at least the foregoing reasons, Appellants respectfully submit this rejection is error and should be reversed.

C. Claims 47-50 and 52 Are Separately Patentable Under 35 U.S.C. § 103(a) Because The Office Points To No Reasons Why The Ordinary Artisan Would Have Been Motivated To Include One Or More Additional Sugars In The Composition Used In The Methods

Appellants respectfully submit that claims 47-50 and 52 are also independently patentable under 35 U.S.C. § 103(a). Those claims recite that the method comprises applying a composition that comprises at least one additional sugar. For the reasons set forth above, the Office has not established a *prima facie* case of obviousness with respect to independent claim 30. Further, the Office has not pointed to any teachings in *Wisotzki*, *Koga*, or *Syed* that would motivate the ordinary artisan to include an additional sugar in the composition, as recited in claims 47-50 and 52. The Office has therefore failed to establish a *prima facie* case with respect to claims 47-50 and 52. Accordingly, Appellants respectfully submit that claims 47-50 and 52 are independently patentable and that the final rejection of those claims should be reversed.

VIII. CONCLUSION

For the reasons given above, pending claims 30-56 are allowable and reversal of the Office's rejections is respectfully requested. Appellants respectfully submit the Office has failed to establish that the claims are *prima facie* obvious over the cited references. Further, Appellants respectfully submit that claims 33-44, 47-50 and 52 are separately patentable over the rejections of record.

To the extent any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this Appeal Brief, such extension is respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 06-0916.

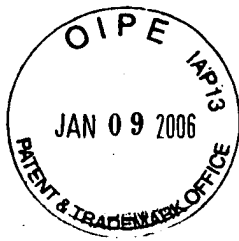
Respectfully submitted,

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Application No.: 09/614,118
Attorney Docket No.: 05725.0393

A. Claims Appendix to Appeal Brief Under Rule 41.37(c)(1)(viii)

1. (Withdrawn) A method of protecting a keratinous fiber from extrinsic damage comprising
applying to said keratinous fiber a composition comprising
at least one sugar chosen from C3 to C5 monosaccharides and derivatives thereof,
wherein said at least one sugar is present in an amount effective to protect said
keratinous fiber.
2. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said C3 to C5 monosaccharide are chosen from pentoses.
3. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 2, wherein said pentoses are chosen from aldopentoses and ketopentoses.
4. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 3, wherein said aldopentoses are chosen from xylose, arabinose, lyxose, and ribose.
5. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 3, wherein said ketopentoses are chosen from ribulose and xylulose.

6. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said C3 to C5 monosaccharides are chosen from tetroses.

7. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 6, wherein said tetroses are chosen from aldotetroses and ketotetroses.

8. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 7, wherein said aldotetroses are chosen from erythrose and treose.

9. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said at least one sugar is erythrulose.

10. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said C3 to C5 monosaccharides are chosen from trioses.

11. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 10, wherein said trioses are chosen from aldotrioses and ketotrioses.

12. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said at least one sugar is glyceraldehyde.

13. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said at least one sugar is dihydroxyacetone.

14. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said C3 to C5 monosaccharides are chosen from furanoses and derivatives thereof.

15. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said derivatives of C3 to C5 monosaccharides are chosen from imine derivatives, hemiacetal derivatives, hemiketal derivatives, and oxidized derivatives.

16. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said at least one sugar is lyxozylimine.

17. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said derivatives of C3 to C5 monosaccharides are chosen from dimers and oligomers of said C3 to C5 monosaccharide.

18. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said at least one sugar is xylobiose.

19. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said composition further comprises at least one additional sugar, said at least one additional sugar being different from said C3 to C5 monosaccharides and derivatives thereof.

20. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 19, wherein said at least one additional sugar is chosen from monosaccharides, disaccharides, and polysaccharides.

21. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 20, wherein said monosaccharides are chosen from hexoses.

22. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 21, wherein said hexoses are chosen from allose, altrose, glucose, mannose, gulose, idose, galactose, talose, sorbose, psicose, fructose, and tagatose.

23. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said at least one sugar is present in said composition at a concentration ranging from 0.01% to 5.00% relative to the total weight of the composition.

24. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 19, wherein said at least one additional sugar is present in said composition at a concentration ranging from 0.01% to 5.00% relative to the total weight of the composition.

25. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said composition is in the form of a liquid, oil, paste, stick, dispersion, emulsion, lotion, gel, or cream.

26. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein said keratinous fiber is chosen from hair, eyelashes, and eyebrows.

27. (Withdrawn) The method of protecting a keratinous fiber from extrinsic damage according to claim 1, wherein the extrinsic damage is caused by heating, UV radiation, or chemical treatment.

28. (Withdrawn) A method of repairing a keratinous fiber following extrinsic damage comprising

applying to said damaged keratinous fiber a composition comprising at least one sugar chosen from C3 to C5 monosaccharides and derivatives thereof, wherein said at least one sugar is present in an amount effective to repair said keratinous fiber.

29. (Withdrawn) The method of repairing a keratinous fiber following extrinsic damage according to claim 28, wherein said composition further comprises at least one additional sugar, said at least one additional sugar being different from said C3 to C5 monosaccharides and derivatives thereof.

30. (Previously Presented) A method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage comprising applying to said keratinous fiber a composition comprising at least one sugar chosen from C3 to C5 monosaccharides and derivatives thereof; and heating said keratinous fiber to at least 45°C,

wherein said at least one sugar is present in an amount effective to protect said keratinous fiber or repair said keratinous fiber,

further wherein said composition is applied prior to said heating or during said heating,

wherein protecting a keratinous fiber means preserving a greater degree of the α -structure and/or the tensile strength of the keratinous fiber following treatment of the keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition; and

wherein repairing a damaged keratinous fiber means increasing the α -structure and/or tensile strength of the damaged keratinous fiber following treatment of the damaged keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition.

31. (Previously Presented) The method according to claim 30, wherein said C3 to C5 monosaccharides are chosen from pentoses.

32. (Previously Presented) The method according to claim 31, wherein said pentoses are chosen from aldopentoses and ketopentoses.

33. (Previously Presented) The method according to claim 32, wherein said aldopentoses are chosen from xylose, arabinose, lyxose, and ribose.

34. (Previously Presented) The method according to claim 32, wherein said ketopentoses are chosen from ribulose and xylulose.

35. (Previously Presented) The method according to claim 30, wherein said C3 to C5 monosaccharides are chosen from tetroses.

36. (Previously Presented) The method according to claim 35, wherein said tetroses are chosen from aldotetroses and ketotetroses.

37. (Previously Presented) The method according to claim 36, wherein said aldotetroses are chosen from erythrose and treose.

38. (Previously Presented) The method according to claim 30, wherein said at least one sugar is erythrulose.

39. (Previously Presented) The method according to claim 30, wherein said C3 to C5 monosaccharides are chosen from trioses.

40. (Previously Presented) The method according to claim 39, wherein said trioses are chosen from aldotrioses and ketotrioses.

41. (Previously Presented) The method according to claim 30, wherein said at least one sugar is glyceraldehyde.

42. (Previously Presented) The method according to claim 30, wherein said at least one sugar is dihydroxyacetone.

43. (Previously Presented) The method according to claim 30, wherein said C3 to C5 monosaccharides are chosen from furanoses and derivatives thereof.

44. (Previously Presented) The method according to claim 30, wherein said derivatives of C3 to C5 monosaccharides are chosen from amine derivatives, hemiacetal derivatives, hemiketal derivatives, and oxidized derivatives.

45. (Previously Presented) The method according to claim 30, wherein said derivatives of C3 to C5 monosaccharides are chosen from dimers and oligomers of said C3 to C5 monosaccharide.

46. (Previously Presented) The method according to claim 30, wherein said at least one sugar is xylobiose.

47. (Previously Presented) The method according to claim 30, wherein said composition further comprises at least one additional sugar, said at least one additional sugar being different from said C3 to C5 monosaccharides and derivatives thereof.

48. (Previously Presented) The method according to claim 47, wherein said at least one additional sugar is chosen from monosaccharides, disaccharides, and polysaccharides.

49. (Previously Presented) The method according to claim 48, wherein said monosaccharides are chosen from hexoses.

50. (Previously Presented) The method according to claim 49, wherein said hexoses are chosen from allose, altrose, glucose, mannose, gulose, idose, galactose, talose, sorbose, psicose, fructose, and tagatose.

51. (Previously Presented) The method according to claim 30, wherein said at least one sugar is present in said composition at a concentration ranging from 0.01% to 5.00% relative to the total weight of the composition.

52. (Previously Presented) The method according to claim 47, wherein said at least one additional sugar is present in said composition at a concentration ranging from 0.01% to 5.00% relative to the total weight of the composition.

53. (Previously Presented) The method according to claim 30, wherein said composition is in the form of a liquid, oil, paste, stick, dispersion, emulsion, lotion, gel, or cream.

54. (Previously Presented) The method according to claim 30, wherein said keratinous fiber is chosen from hair, eyelashes, and eyebrows.

55. (Previously Presented) The method according to claim 30, wherein said extrinsic damage is caused by heating, UV radiation, or chemical treatment.

56. (Previously Presented) The method according to claim 30, wherein said composition protects a keratinous fiber from extrinsic damage and repairs a keratinous fiber following extrinsic damage.

B. Evidence Appendix to Appeal Brief Under Rule 41.37(c)(1)(ix)

No evidence submitted pursuant to §§ 1.130-1.132 or any other evidence entered by the Office is relied upon by Appellants in this appeal.

C. Related Proceedings Appendix to Appeal Brief Under Rule 41.37(c)(1)(x)

No decisions in related proceedings were identified in this Appeal Brief.